

REMARKS

Claims 1-35 are currently pending. Reconsideration of the above-identified application is respectfully requested. The Examiner's indication of allowable subject matter in claims 5, 15, 20, 22, 25-27, 29-32, 34 and 35, and the allowance of claims 23 and 24, are acknowledged with appreciation. Inasmuch as claim 25 is an independent claim, Applicants understand the Examiner's comments to mean that claims 25-27 are allowed.

At the outset, Applicants note that the Office Action Summary sheet does not acknowledge Applicants' claim for foreign priority or receipt of the certified copy of the priority document. A Claim For Convention Priority was filed on October 10, 2001 along with a certified copy of Japanese Patent Application No. 2001-146833. Applicants respectfully request that the Office acknowledge the priority claim and receipt of the certified copy of the priority document.

The Office Action includes a rejection of claims 1-4, 6-9, 11-13, 17, 20, and 28 under 35 U.S.C. §102(b) as allegedly being anticipated by the Sayana Tomoaki patent (Japanese Patent No. 3013845), which corresponds to JP 2000-138495 submitted with Applicants' Information Disclosure Statement filed on January 11, 2002. This rejection is respectfully traversed.

Independent claim 1 recites an optical module, comprising an optical semiconductor element for receiving or outputting a high frequency signal, a package having a cavity in which the optical semiconductor element is placed, and an electromagnetic wave absorptive element, arranged on an inner surface of the package, for attenuating electromagnetic

waves which are generated in the cavity of the package by the high frequency signal. The optical module further comprises a seal element for covering the electromagnetic wave absorptive element and hermetically sealing the electromagnetic wave absorptive element from the cavity of the package, the seal element being made of material which allows the electromagnetic waves to penetrate therethrough.

In contrast, the Sayana Tomoaki patent discloses a package for a high-frequency millimeter-wave integrated circuit (see Abstract and Figures 1 and 2 therein). Contrary to the Office's suggestion, the Sayana Tomoaki patent does not disclose an optical module comprising an optical semiconductor element; rather, the Sayana Tomoaki patent discloses a high-frequency circuit portion 3 comprising semiconductor devices, which is mounted on a package base 1 (see Abstract and Figure 1). There is no indication in the Sayana Tomoaki patent that the disclosed semiconductor devices include an optical semiconductor device as recited in claim 1. Claim 1 is not anticipated for at least this reason.

In addition, contrary to the Office's suggestion, the cap 6 disclosed in the Sayana Tomoaki patent is not a seal element for covering an electromagnetic wave absorptive element and hermetically sealing the electromagnetic wave absorptive element from the cavity of the package, the seal element being made of material which allows the electromagnetic waves to penetrate therethrough, as recited in claim 1. Rather, the Sayana Tomoaki patent discloses that the cap 6 covers the package base 1 having a radio wave absorber and is made of metal or other material to be electromagnetically shielded (see Abstract). Accordingly, the cap 6 is not made of a material that allows the electromagnetic waves to propagate therethrough. Moreover, there is no disclosure in the Sayana Tomoaki

patent that the cap 6 provides a hermetic seal. Accordingly, the cap 6 disclosed in the Sayana Tomoaki patent is not a seal element as claimed in claim 1 for at least these reasons. For at least the above-noted reasons, withdrawal of the rejection and allowance of claim 1 are respectfully requested. Claims 2-4, 6-9 and 11-13 depend from claim 1 and are, therefore, allowable at least by virtue of dependency.

Independent claim 17 recites an optical module, comprising an optical semiconductor element for receiving or outputting a high frequency signal and a package having a cavity, in which the optical semiconductor element is placed, and a wall portion which allows electromagnetic waves to penetrate therethrough. The optical module also comprises an electromagnetic wave absorptive element, arranged on an outer surface of the wall portion of the package, for attenuating electromagnetic waves which are generated in the cavity of the package by the high frequency signal. The optical module further comprises a metal layer for covering an outer surface of the electromagnetic wave absorptive element.

Contrary to the Office's suggestion, the Sayana Tomoaki patent does not disclose an optical module as recited in claim 17 at least because the Sayana Tomoaki patent does not disclose an optical semiconductor element (reasons for which were set forth above with regard to claim 1). In addition, the Office's rejection does not even allege which feature of the Sayana Tomoaki device allegedly corresponds to the claimed wall portion of the package which allows electromagnetic waves to penetrate therethrough. Further, to the extent that the Office appears to be relying on the cap 26 illustrated in Figure 2 of the Sayana Tomoaki patent as allegedly corresponding to the claimed "metal layer for covering

an outer surface of the electromagnetic wave absorptive element", Applicants respectfully submit that the embodiments illustrated in Figures 1 and 2 of the Sayana Tomoaki patent are separate embodiments, and the Office should not selectively choose and combine features of the separate embodiments illustrated therein in its anticipation rejection. For at least the above noted reasons, withdrawal of the rejection and allowance of claim 17 are respectfully requested. Claim 20 depends from claim 17 and is, therefore, allowable at least by virtue of dependency.

Independent claim 28 recites an optical transmitter comprising an interface unit for receiving electric signals and outputting a high frequency signal, and an optical module for receiving the high frequency signal from the interface unit and outputting an optical signal. The optical module comprises components substantially as recited in claim 1 (including an optical semiconductor element), which was discussed above.

Contrary to the Office's suggestion, the Sayana Tomoaki patent does not disclose an optical transmitter as recited in claim 28 at least because the Sayana Tomoaki patent does not disclose an optical semiconductor element (reasons for which were set forth above with regard to claim 1). Moreover, the Office's rejection does not even allege which feature of the Sayana Tomoaki device allegedly corresponds to the claimed interface unit that receives electric signals and outputs a high frequency signal to the optical module. For at least the above noted reasons, withdrawal of the rejection and allowance of claim 28 are respectfully requested.

The Office Action also includes a rejection of claims 14, 16, 19 and 21 under 35 U.S.C. §103(a) as allegedly being unpatentable over the Sayana Tomoaki patent as applied

to claims 1 and 17, and further in view of the Pan et al. patent (U.S. Patent No. 6,012,853). This rejection is respectfully traversed.

First, Applicants respectfully submit that claims 14, 16, 19 and 21 are allowable at least by virtue of dependency, as these claims depend from either claim 1 or 17, whose patentability has been argued above. Accordingly, withdrawal of the rejection and allowance of claims 14, 16, 19 and 21 are respectfully requested for at least this reason.

In addition, Applicants respectfully submit that the Office's rejection does not make out a *prima facie* case of obviousness against claims 14, 16, 19 and 21, nor would it make out a *prima facie* case of obviousness against independent claims 1 and 17, from which claims 14, 16, 19 and 21 depend. The Office acknowledges that the Sayana Tomoaki patent does not disclose a laser diode or a photodiode as recited in claims 14, 16, 19 and 21. However, the Office alleges that using a photodiode or a laser diode as a high frequency device is well known in the art, as allegedly disclosed by the Pan et al. patent. The Office further suggests that one of ordinary skill in the art would have been motivated at the time the invention was made to modify the Sayana Tomoaki patent to include a photodiode or laser diode as allegedly disclosed by the Pan et al. patent for the purpose of making the high-frequency integrated circuit disclosed in the Sayana Tomoaki patent functional for optical systems.

Applicants respectfully submit that the Office's rejection does not set forth proper motivation for the suggested hypothetical modification of the device disclosed in the Sayana Tomoaki patent. The Office's suggested purpose for modifying the device disclosed in the Sayana Tomoaki patent (i.e., to make the high-frequency integrated circuit disclosed in the

Sayana Tomoaki patent functional for optical systems) is an unsubstantiated assertion for which the Office has provided no support from a prior art reference. Applicants see no disclosure in either the Sayana Tomoaki patent or the Pan et al. patent suggesting such motivation.

In addition, Applicants disagree that one of ordinary skill in the art would have been motivated to make the modification suggested by the Office. The Sayana Tomoaki patent discloses a high-frequency millimeter-wave integrated circuit that has no bearing on generating or receiving optical signals. The Pan et al. patent is directed to the use of non-reflective coatings in a package for a laser diode (see, e.g., Abstract therein). Applicants respectfully submit that one of ordinary skill in the art would not seek to use the device disclosed in the Sayana Tomoaki patent as a starting point for subsequent modification to include the Pan et al. laser diode in order to create an optical module having an optical semiconductor element for receiving or outputting a high-frequency signal. Rather, one of ordinary skill in the art would reasonably understand the differences in design considerations between high-frequency *optical* modules and high-frequency millimeter-wave integrated circuits unrelated to optical signals, and would reasonably seek to design a high-frequency *optical* module from the outset using dedicated design considerations appropriate for that class of device. Withdrawal of the rejection and allowance of claims 14, 16, 19 and 21 are respectfully requested for at least these reasons.

Moreover, Applicants respectfully submit that the Office's characterization of the Pan et al. patent for the proposition that "using a photo or a laser diode as a high frequency device is well known in the art" is overbroad and does not provide motivation for the

Office's hypothetical modification. In particular, the above-quoted proposition fails to acknowledge substantial differences between high-frequency millimeter-wave integrated circuits that have no relation to generating or receiving optical signals (such as disclosed in the Sayana Tomoaki patent) and optical modules having optical semiconductor elements that operate at high frequencies (such as disclosed in the present application). The Pan et al. patent, which discloses a package for a laser diode, contains no disclosure touching on the subject matter of high-frequency millimeter-wave integrated circuits of the type disclosed in the Sayana Tomoaki patent. In addition, it is noted that the Pan et al. patent does not even mention photodiodes. Withdrawal of the rejection and allowance of claims 14, 16, 19 and 21 is respectfully requested for at least these additional reasons.

The Office Action also includes a rejection of claims 10 and 18 under 35 U.S.C. §103(a) as allegedly being unpatentable over the Sayana Tomoaki patent as applied to claims 1 and 17, and further in view of the Pan et al. patent (U.S. Patent No. 6,012,853). Applicants respectfully traverse and submit that claims 10 and 18 are allowable at least by virtue of dependency from claims 1 and 17, respectively. Withdrawal of the rejection and allowance of claims 10 and 18 are respectfully requested.

The Office Action also includes an objection to claims 25-27, 29-32 and 34-35 as being dependent upon a rejected base claim. Inasmuch as claim 25 is an independent claim, Applicants understand the Office's comments to mean that claims 25-27 are allowed. In addition, given that the remaining claims are believed to be in condition for allowance, Applicants respectfully submit that claims 29-32 and 34-35 are presently in condition for

allowance. Withdrawal of the objection and allowance of claims 25-27, 29-32 and 34-35 are respectfully requested.

In addition, it is noted that paragraph 9 of the Office Action indicates that claim 4 contains allowable subject matter, whereas paragraph 2 suggests that claim 4 is rejected. Similarly, paragraph 9 of the Office Action indicates that claim 20 contains allowable subject matter, whereas paragraph 2 suggests that claim 20 is rejected. Accordingly, the disposition of these claims it is not understood, and clarification is requested.

Finally, it is noted that the Office has not stated a rejection against independent claim 33. Claim 33 is believed to be allowable at least for reasons similar to those already set forth above. Should the Office state a rejection against claim 33 in a subsequent Office Action, Applicants respectfully submit that such action should not be made final so that Applicants have adequate opportunity to respond.

In light of the foregoing remarks, withdrawal of the rejections and objections of record are respectfully requested so that the present application may pass to issuance. Should there be any questions in connection with this application, the Office is invited to contact the undersigned at the number below.

Respectfully submitted,

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